

Siyuan Tang (唐思远)

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Education

University of Science and Technology of China (USTC)

Hefei, China

Bachelor of Science in Statistics

Sep. 2021- Jun. 2025

- GPA: 4.00/4.3
- Weighted average: 91.8/100
- Ranking: 2nd in the Department of Statistics and Finance

Core course grades

Statistics:

- | | |
|--|---|
| • Nonparametric Statistics (100) | • Machine Learning (92) |
| • Regression Analysis (100) | • Probability (95) |
| • Multivariate Analysis A (96) | • Mathematical Statistics (90) |
| • Categorical Data Analysis (100) | • Applied Statistical Software (90) |
| • Fundamentals of Statistical Algorithm (92) | • Introduction to Deep Learning ¹ (98) |

Mathematics:

- | | |
|--------------------------------------|---|
| • Real Analysis (93) | • Introduction to Differential Equations with Applications (90) |
| • Complex Analysis ² (90) | • Mathematical Analysis B1 and B2 (91 and 90) |
| • Functional Analysis (91) | • Linear Algebra B1 and B2 (90 and 90) |
| • Convex Optimization (92) | |

Physics³: Mechanics A (97), Thermotics A (90), Electromagnetism A (97)

Research Interests

Future statisticians should have the ability to conduct end-to-end research, from data collection and preprocessing to model development, goodness-of-fit assessments, performance evaluation, and ultimately, communicating findings in ways that are impactful for real-world applications.

Specifically, I wish to find statistical models which are both realistic and mathematically tractable, **solving real-world problems with theoretical guarantees**.

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|-------------------------------|----------------------------|--------------------------------|
| • High-dimensional statistics | • Nonparametric statistics | • Statistical network analysis |
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¹An elective course for statistics undergraduates taught by the School of Artificial Intelligence and Data Science at USTC.

²In my official transcript, this course title is translated as “Complex Variable”. However, the correct translation is “Complex Analysis”.

³Although Siyuan Tang’s major is statistics, he has taken some physics courses designed for physics undergraduates. They are included here because physics courses typically require advanced mathematical skills.

Research Experiences

A Novel Approach to Solar Flare Forecasting: Energy-Based Prediction and Classification Using SHARP⁴ Parameters [Paper in Preparation] Jul. 2024 - Present

Advisor: Assistant Professor Yang Chen (Department of Statistics, University of Michigan)

- Developed a data-driven modeling strategy for flare trajectories and performed goodness-of-fit assessments, including tests of correlation and normality.
- Proposed an energy-based identification method, achieving improved classification performance measured by the True Skill Statistic for strong flare events.
- Transformed the two-step framework (energy regression + threshold optimization) into a one-step approach by using a sigmoid function to approximate the indicator function.

Minimum Variance Portfolio (MVP) Estimation with Sparsity Mar. 2023 - Sep. 2023

Advisor: Associate Professor Bo Zhang (Department of Statistics and Finance, USTC)

- Learned a polynomial-time algorithm for best-subset selection problem from an existing paper.
- Developed a new algorithm to fit into the MVP problem with a given support size, and implemented it in R using parallel computing.
- Compared the predicted risk and actual risk and explored the effectiveness in both low and high dimensions.

Skills

Programming: Python, R, C

Typesetting: \LaTeX , Markdown

Language

TOEFL: Total 103 (Reading 25, Listening 28, Speaking 24, Writing 26)

GRE general: Verbal 153 (55%) + Quantitative 170 (92%) + Analytical Writing 3.0 (16%)

Honors and Awards

Outstanding Student Scholarship 3 times (2022, 2023, and 2024)

⁴SHARP stands for Space-weather Helioseismic and Magnetic Imager Active Region Patches, a dataset used in solar physics.